



**National Aeronautics and  
Space Administration**

**July 1, 1998**

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**NRA-98-OES-07**

# **RESEARCH ANNOUNCEMENT**

**INVESTIGATIONS TO SUPPORT THE NASA SEASONAL-TO-INTERANNUAL  
PREDICTION PROJECT**

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**Proposals Due August 31, 1998**

**INVESTIGATIONS TO SUPPORT THE NASA SEASONAL-TO-INTERANNUAL  
PREDICTION PROJECT**

**NASA Research Announcement  
Soliciting Research Proposals  
for  
Period Ending  
August 31, 1998**

**NRA 98-OES-07  
Issued July 1, 1998**

**Office of Earth Science  
National Aeronautics and Space Administration  
Washington, DC 20546**

**Identifier:** NRA 98-OES-07

**Submit Letter of Intent to:** NSIPP  
Code Y  
400 Virginia Avenue, SW, Suite 700  
Washington, DC 20024

**Submit Proposals to:** NSIPP  
Code Y  
400 Virginia Avenue, SW, Suite 700  
Washington, DC 20024

**Number of Copies Required:** 12

**Selecting Official:** Director, Research Division  
Office of Earth Science  
NASA Headquarters

**Obtain Additional Information From:** Dr. Kenneth H. Bergman  
Manager, Global Modeling and Analysis  
Code YS  
NASA Headquarters  
300 E Street, SW  
Washington, DC 20546  
Telephone: (202) 358-0765  
FAX: (202) 358-2770  
email: kbergman@hq.nasa.gov

Please use identifier number NRA-98-OES-07 when making an inquiry regarding this Announcement. Your interest and cooperation in participating in this effort are appreciated.

ORIGINAL SIGNED BY

Dr. Ghassem Asrar  
Associate Administrator  
Office of Earth Science

**NASA RESEARCH ANNOUNCEMENT  
INVESTIGATIONS TO SUPPORT THE NASA  
SEASONAL-TO-INTERANNUAL PREDICTION PROJECT**

**I. INTRODUCTION**

The National Aeronautics and Space Administration (NASA) intends to solicit proposals for investigations that will contribute to the NASA Seasonal-to-Interannual Prediction Project (NSIPP). This project aims to show the value of remotely sensed observations in the experimental prediction of climate variations on seasonal-to-interannual time scales using a coupled climate system model. An NSIPP core modeling activity has been initiated at the NASA Goddard Space Flight Center (GSFC). Proposals will be solicited that are collaborative with the core activity or that make significant contributions toward furthering the goals of that activity. Selected proposals, together with the core activity, will constitute a focused science team effort to demonstrate the value of operational and experimental satellite observations in improving seasonal-to-interannual climate prediction as well as developing new climate modeling methodologies that lead to improved predictions.

More accurate predictions, or predictions with longer lead times, of climate variations on seasonal-to-interannual time scales will have potentially large payoffs for many socioeconomic interests in the United States and elsewhere.

This NRA will be open to all scientific investigators who submit proposals that are consistent with the objectives of NSIPP, as detailed in the NRA, and that meet other requirements that are listed in the NRA. A total of approximately \$1.0 million per year for a period of three years is expected to be awarded to several projects under the terms of this announcement. Individual awards are not expected to exceed \$200,000 per year. A technical description of investigations of interest appears in Appendix A.

Participation in this program is open to all categories of domestic and foreign organizations, including educational institutions, industry, non-profit institutions, NASA centers, and other U.S. agencies. In accordance with NASA policy, all investigations by foreign participants will be conducted without any exchange of funds, i.e., investigators whose home institution is outside the United States cannot be funded by NASA. Proposals may be submitted at any time during the period ending August 31, 1998. NASA reserves the right to consider proposals received after that date in accordance with Appendix B, paragraph 11, i.e., "the selecting official deems the late proposal to offer significant technical advantage or cost reduction." Proposals submitted to NASA will be evaluated through scientific peer reviews and engineering feasibility reviews. Selection is expected to be announced during October 1998.

All prospective proposers are strongly encouraged to submit a letter of intent to propose to this Announcement by July 31, 1998. This letter should contain a brief description of the research to be proposed.

Technical information contained in Appendix A applies to this Research Announcement only. Appendix B through D contain NASA general guidelines for the preparation of proposals solicited by this Research Announcement. Appendix E gives information for electronic submittal of a letter of intent, and Appendix F contains instructions for preparing a budget summary.

**NASA RESEARCH ANNOUNCEMENT  
INVESTIGATIONS TO SUPPORT THE NASA SEASONAL-TO-INTERANNUAL  
PREDICTION PROJECT**

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## **APPENDIX A TECHNICAL DESCRIPTION**

### **1. Purpose of this NASA Research Announcement**

The purpose of this NASA Research Announcement is to solicit support for scientific investigations in support of the NASA Seasonal-to-Interannual Prediction Project (NSIPP). NASA is developing the use of existing and planned remote observing systems together with in situ observations for experimental predictions of seasonal-to-interannual climate variations. The overall goals of NSIPP are to:

- develop the use of satellite observations for improving predictions of climate variations on seasonal-to-interannual time scales
- find the optimal blend of remote surface observations and subsurface data needed for such a prediction capability
- develop assimilation and coupled model systems that will provide the best possible predictions of El Nino-Southern Oscillation (ENSO) events, other significant short-term climate variations, and global teleconnections of these variations.

NASA has established an NSIPP core project at Goddard Space Flight Center (GSFC) to conduct research in support of these goals. In order to broaden scientific participation in NSIPP, NASA is seeking the collaboration of investigators at other institutions, leading to the development of a cooperative science team effort.

### **2. Background**

#### **a. Context of NASA's Seasonal-to-Interannual Program**

Understanding and predicting seasonal-to-interannual climate variations is recognized as an essential goal within the overall NASA strategy for climate research. This focused activity also serves one of the four major scientific themes of the U.S. Global Change Research Program (USGCRP). By focusing on the application of remotely sensed observations, NASA expects to make unique contributions to a major science theme of the USGCRP and to the CLIVAR/GOALS and GEWEX international research programs. Further information on NASA's seasonal-to-interannual climate variability and prediction research may be found at <http://www.hq.nasa.gov/office/mtpe/draftsciplan/mtpe-srp.htm>.

#### **b. NSIPP's Approach**

NSIPP seeks to develop the use of satellite data, especially altimeter and scatterometer data, in model prediction systems, to assess the role of satellite data as part of a global observing system, and to aid in the design of the observing system by conducting Observing System Simulation Experiments (OSSE's) and predictability studies. The NSIPP approach is based on the expectation that coupled models offer the best prospect for extending prediction of tropical sea surface temperature (SST) anomalies to prediction of global precipitation and temperature anomalies. The components of such a model system consist of oceanic and atmospheric general circulation models (OGCM and AGCM) and an interactively coupled interface between them, a land surface hydrological model coupled to the AGCM, and (for some applications) a sea-ice model coupled to both OGCM and AGCM. Since suitable component models already exist, the primary NSIPP focus will be on developing effective coupling of these models and on evaluation of experimental seasonal-to-interannual (S-I) climate predictions using such coupled models.

A necessary prerequisite for initializing predictive model systems is a set of gridded fields of the prediction variables at the initial time. These are most effectively provided using model-based data assimilation methods. NSIPP will have a secondary focus on development and application of ocean data assimilation techniques suitable for the S-I prediction problem. NSIPP plans to utilize Monte Carlo assimilation techniques as well as the global data assimilation system of the GSFC Data Assimilation Office (DAO) for atmospheric and land surface data assimilation, perhaps with modifications appropriate for the S-I prediction problem.

The global coupled general circulation model (CGCM), developed at Goddard, uses an (AGCM) (e.g., Suarez and Takacs, NASA Tech. Memo. No. 104606, volume 5, 1995), a quasi-isopycnal ocean model (Schopf and Loughe, Mon. Wea. Rev., 123, 2839-2863, 1995), a state-of-the-art land surface model (LSM) (e.g., Koster and Suarez, J. Geophys. Res., 97, 2697-2715, 1992), and a thermodynamic sea-ice model. The CGCM system will predict global surface boundary conditions to be used by a coupled AGCM-LSM system for the ensemble prediction of the teleconnections of ENSO.

An ocean data assimilation system, optimized for short-term climate variability, is being implemented with the CGCM. The initial assimilation system is based on optimal interpolation methodology, using the Physical-Space Statistical Assimilation System (PSAS) developed by the DAO at Goddard (e.g., daSilva and Guo, DAO Office Note 96-02, available through the web as [ftp://dao.gsfc.nasa.gov/pub/office\\_notes/on9602.ps.Z](ftp://dao.gsfc.nasa.gov/pub/office_notes/on9602.ps.Z)), but with modifications relevant to ocean applications. In addition, Ensemble Kalman Filter techniques are being investigated for prognostic calculations of the forecast error covariances. The initial assimilation system will focus on temperature and salinity profile data, surface altimeter data and surface wind observations in the tropics, but will eventually expand to other data types such as ocean current information from moorings, floats and drifters, SST data and precipitation observations, and will expand to global capabilities.

NSIPP will be implemented on a scalable parallel architecture computer system. Currently, a T3E parallel system with 512 nodes, each with 128 MB memory, is available to support the

project. Research partners selected through this NRA will be eligible to apply for use of the T3E system.

### **3. Types of Proposals**

This NASA Research Announcement (NRA) solicits proposals to build a science team that will contribute to the success of NSIPP. Proposals are sought for new efforts which will enhance the NSIPP prediction activities and capabilities. In addition, since NASA already supports significant efforts in S-I topics through its many programs and mission-specific science working teams, the NRA especially targets proposals which leverage off these existing efforts to make direct connections with NSIPP and bring these research efforts to bear on S-I prediction. Only proposals which address the NSIPP goals and have a clear relationship to the NSIPP core activity will be considered in the review process. Proposals should indicate in an introductory statement why the proposed research is relevant to this NRA and will constitute a significant contribution to the overall NSIPP effort.

Examples of specific areas in which the NSIPP seeks collaboration on additional research and development activities:

- (i) Studies of the predictability of the coupled ocean-atmosphere-land-sea ice system with GCMs, especially using NSIPP core activity component models in alternative coupled configurations with other component models.
- (ii) Isopycnal ocean model development and validation, with special attention to mixing processes, convective mixing and deep water formation, numerics, hybrid coordinates, and topographic effects.
- (iii) Development of ocean data assimilation techniques, especially ones suitable for isopycnal ocean models. The framework of these techniques must recognize model deficiencies.
- (iv) Improvements in atmospheric process parameterization, particularly those associated with tropical circulation regimes.
- (v) Studies that downscale predicted large-scale SST-forced atmospheric circulation anomalies to the effects on regional climate, particularly through the use of nested or variable resolution atmospheric-hydrological models. In particular, such studies could simulate the regional impact of the 1997-98 El Nino event.
- (vi) Land surface hydrology model development, especially improvements in the watershed representation. Applications of ensemble prediction methods to hydrological forecasts, and related end-to-end prediction studies, are of particular interest.

(vii) Soil moisture initialization and assimilation of relevant satellite observations.

(viii) Analysis of NSIPP's multidecadal integrations, evaluation of the skill of experimental forecasts, and applications to diagnostic studies of S-I variability and predictability.

(ix) Use of the NSIPP core prediction system for development of alternative initialization strategies, satellite data impact studies, and observing system simulation experiments.

Proposals that address other research topics will be considered provided relevancy to NSIPP goals is clearly indicated.

In addition to the usual budget request, proposals should include a statement of justification for any requested use of T3E computer resources that are required.

Investigators of successful proposals will be expected, at minimum, to attend yearly scientific working team meetings. More frequent interactions with NSIPP core project investigators will be encouraged and will help ensure the success of a comprehensive program in S-I prediction that takes full advantage of the unique characteristics of satellite observations.

#### **4. Guidance for Proposers**

Instructions for submission of a proposal in response to this announcement are given in Appendix B. Investigators are encouraged to discuss possible proposed projects with the principal investigator of the NSIPP core project, Dr. Michele Rienecker (301-286-6178; [michele.rienecker@gsfc.nasa.gov](mailto:michele.rienecker@gsfc.nasa.gov)), or the responsible NASA program manager, Dr. Kenneth Bergman (202-358-0765; [kbergman@hq.nasa.gov](mailto:kbergman@hq.nasa.gov)).

## **Appendix B**

### **INSTRUCTIONS FOR RESPONDING TO NASA RESEARCH ANNOUNCEMENTS**

**(JANUARY 1997)**

**(a) General.**

(1) Proposals received in response to a NASA Research Announcement (NRA) will be used only for evaluation purposes. NASA does not allow a proposal, the contents of which are not available without restriction from another source, or any unique ideas submitted in response to an NRA to be used as the basis of a solicitation or in negotiation with other organizations, nor is a pre-award synopsis published for individual proposals.

(2) A solicited proposal that results in a NASA award becomes part of the record of that transaction and may be available to the public on specific request; however, information or material that NASA and the awardee mutually agree to be of a privileged nature will be held in confidence to the extent permitted by law, including the Freedom of Information Act.

(3) NRAs contain programmatic information and certain requirements which apply only to proposals prepared in response to that particular announcement. These instructions contain the general proposal preparation information which applies to responses to all NRAs.

(4) A contract, grant, cooperative agreement, or other agreement may be used to accomplish an effort funded in response to an NRA. NASA will determine the appropriate instrument. Contracts resulting from NRAs are subject to the Federal Acquisition Regulation and the NASA FAR. Supplement. Any resultant grants or cooperative agreements will be awarded and administered in accordance with the NASA Grant and Cooperative Agreement Handbook (NPG 5800.1).

(5) NASA does not have mandatory forms or formats for responses to NRAs; however, it is requested that proposals conform to the guidelines in these instructions. NASA may accept proposals without discussion; hence, proposals should initially be as complete as possible and be submitted on the proposers' most favorable terms.

(6) To be considered for award, a submission must, at a minimum, present a specific project within the areas delineated by the NRA; contain sufficient technical and cost information to permit a meaningful evaluation; be signed by an official authorized to legally bind the submitting organization; not merely offer to perform standard services or to just provide computer facilities or services; and not significantly duplicate a more specific current or pending NASA solicitation.

**(b) NRA-Specific Items.** Several proposal submission items appear in the NRA itself: the unique NRA identifier; when to submit proposals; where to send proposals; number of copies required; and sources for more information. Items included in these instructions may be supplemented by the NRA.

(c) The following information is needed to permit consideration in an objective manner. NRAs will generally specify topics for which additional information or greater detail is desirable. Each proposal copy shall contain all submitted material, including a copy of the transmittal letter if it contains substantive information.

**(1) Transmittal Letter or Prefatory Material.**

(i) The legal name and address of the organization and specific division or campus identification if part of a larger organization;

(ii) A brief, scientifically valid project title intelligible to a scientifically literate reader and suitable for use in the public press;

(iii) Type of organization: e.g., profit, nonprofit, educational, small business, minority, women-owned, etc.;

(iv) Name and telephone number of the principal investigator and business personnel who may be contacted during evaluation or negotiation;

(v) Identification of other organizations that are currently evaluating a proposal for the same efforts;

(vi) Identification of the NRA, by number and title, to which the proposal is responding;

(vii) Dollar amount requested, desired starting date, and duration of project;

(viii) Date of submission; and

(ix) Signature of a responsible official or authorized representative of the organization, or any other person authorized to legally bind the organization (unless the signature appears on the proposal itself).

**(2) Restriction on Use and Disclosure of Proposal Information.** Information contained in proposals is used for evaluation purposes only. Offerors or quoters should, in order to maximize protection of trade secrets or other information that is confidential or privileged, place the following notice on the title page of the proposal and specify the information subject to the notice by inserting an appropriate identification in the notice. In any event, information

contained in proposals will be protected to the extent permitted by law, but NASA assumes no liability for use and disclosure of information not made subject to the notice.

## **Notice**

### **Restriction on Use and Disclosure of Proposal Information**

The information (data) contained in [insert page numbers or other identification] of this proposal constitutes a trade secret and/or information that is commercial or financial and confidential or privileged. It is furnished to the Government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed other than for evaluation purposes; provided, however, that in the event a contract (or other agreement) is awarded on the basis of this proposal the Government shall have the right to use and disclose this information (data) to the extent provided in the contract (or other agreement). This restriction does not limit the Government's right to use or disclose this information (data) if obtained from another source without restriction.

(3) **Abstract.** Include a concise (200-300 word if not otherwise specified in the NRA) abstract describing the objective and the method of approach.

#### **(4) Project Description.**

(i) The main body of the proposal shall be a detailed statement of the work to be undertaken and should include objectives and expected significance; relation to the present state of knowledge; and relation to previous work done on the project and to related work in progress elsewhere. The statement should outline the plan of work, including the broad design of experiments to be undertaken and a description of experimental methods and procedures. The project description should address the evaluation factors in these instructions and any specific factors in the NRA. Any substantial collaboration with individuals not referred to in the budget or use of consultants should be described. Subcontracting significant portions of a research project is discouraged.

(ii) When it is expected that the effort will require more than one year, the proposal should cover the complete project to the extent that it can be reasonably anticipated. Principal emphasis should be on the first year of work, and the description should distinguish clearly between the first year's work and work planned for subsequent years.

(5) **Management Approach.** For large or complex efforts involving interactions among numerous individuals or other organizations, plans for distribution of responsibilities and arrangements for ensuring a coordinated effort should be described.

(6) **Personnel.** The principal investigator is responsible for supervision of the work and participates in the conduct of the research regardless of whether or not compensated under the

award. A short biographical sketch of the principal investigator, a list of principal publications and any exceptional qualifications should be included. Omit social security number and other personal items which do not merit consideration in evaluation of the proposal. Give similar biographical information on other senior professional personnel who will be directly associated with the project. Give the names and titles of any other scientists and technical personnel associated substantially with the project in an advisory capacity. Universities should list the approximate number of students or other assistants, together with information as to their level of academic attainment. Any special industry-university cooperative arrangements should be described.

**(7) Facilities and Equipment.**

(i) Describe available facilities and major items of equipment especially adapted or suited to the proposed project, and any additional major equipment that will be required. Identify any Government-owned facilities, industrial plant equipment, or special tooling that are proposed for use. Include evidence of its availability and the cognizant Government points of contact.

(ii) Before requesting a major item of capital equipment, the proposer should determine if sharing or loan of equipment already within the organization is a feasible alternative. Where such arrangements cannot be made, the proposal should so state. The need for items that typically can be used for research and non-research purposes should be explained.

## **(8) Proposed Costs.**

(i) Proposals should contain cost and technical parts in one volume: do not use separate "confidential" salary pages. As applicable, include separate cost estimates for salaries and wages; fringe benefits; equipment; expendable materials and supplies; services; domestic and foreign travel; ADP expenses; publication or page charges; consultants; subcontracts; other miscellaneous identifiable direct costs; and indirect costs. List salaries and wages in appropriate organizational categories (e.g., principal investigator, other scientific and engineering professionals, graduate students, research assistants, and technicians and other non-professional personnel). Estimate all staffing data in terms of staff-months or fractions of full-time.

(ii) Explanatory notes should accompany the cost proposal to provide identification and estimated cost of major capital equipment items to be acquired; purpose and estimated number and lengths of trips planned; basis for indirect cost computation (including date of most recent negotiation and cognizant agency); and clarification of other items in the cost proposal that are not self-evident. List estimated expenses as yearly requirements by major work phases.

(iii) Allowable costs are governed by FAR Part 31 and the NASA FAR Supplement Part 1831 (and OMB Circulars A-21 for educational institutions and A-122 for nonprofit organizations).

(9) **Security.** Proposals should not contain security classified material. If the research requires access to or may generate security classified information, the submitter will be required to comply with Government security regulations.

(10) **Current Support.** For other current projects being conducted by the principal investigator, provide title of project, sponsoring agency, and ending date.

## **(11) Special Matters.**

(i) Include any required statements of environmental impact of the research, human subject or animal care provisions, conflict of interest, or on such other topics as may be required by the nature of the effort and current statutes, executive orders, or other current Government-wide guidelines.

(ii) Proposers should include a brief description of the organization, its facilities, and previous work experience in the field of the proposal. Identify the cognizant Government audit agency, inspection agency, and administrative contracting officer, when applicable.

## **(d) Renewal Proposals**

(1) Renewal proposals for existing awards will be considered in the same manner as proposals for new endeavors. A renewal proposal should not repeat all of the information that was in the original proposal. The renewal proposal should refer to its predecessor, update the parts that are no longer current, and indicate what elements of the research are expected to be covered during the period for which support is desired. A description of any significant findings since the most recent progress report should be included. The renewal proposal should treat, in reasonable detail, the plans for the next period, contain a cost estimate, and otherwise adhere to these instructions.

(2) NASA may renew an effort either through amendment of an existing contract or by a new award.

(e) **Length.** Unless otherwise specified in the NRA, effort should be made to keep proposals as brief as possible, concentrating on substantive material. Few proposals need exceed 15-20 pages. Necessary detailed information, such as reprints, should be included as attachments. A complete set of attachments is necessary for each copy of the proposal. As proposals are not returned, avoid use of "one-of-a-kind" attachments.

**(f) Joint Proposals.**

(1) Where multiple organizations are involved, the proposal may be submitted by only one of them. It should clearly describe the role to be played by the other organizations and indicate the legal and managerial arrangements contemplated. In other instances, simultaneous submission of related proposals from each organization might be appropriate, in which case parallel awards would be made.

(2) Where a project of a cooperative nature with NASA is contemplated, describe the contributions expected from any participating NASA investigator and agency facilities or equipment which may be required. The proposal must be confined only to that which the proposing organization can commit itself. "Joint" proposals which specify the internal arrangements NASA will actually make are not acceptable as a means of establishing an agency commitment.

(g) **Late Proposals.** A proposal or modification received after the date or dates specified in an NRA may be considered if doing so is in the best interests of the Government.

(h) **Withdrawal.** Proposals may be withdrawn by the proposer at any time before award. Offerors are requested to notify NASA if the proposal is funded by another organization or of other changed circumstances which dictate termination of evaluation.

**(i) Evaluation Factors**

(1) Unless otherwise specified in the NRA, the principal elements (of approximately equal weight) considered in evaluating a proposal are its relevance to NASA's objectives, intrinsic merit, and cost.

(2) Evaluation of a proposal's relevance to NASA's objectives includes the consideration of the potential contribution of the effort to NASA's mission.

(3) Evaluation of its intrinsic merit includes the consideration of the following factors of equal importance:

(i) Overall scientific or technical merit of the proposal or unique and innovative methods, approaches, or concepts demonstrated by the proposal.

(ii) Offeror's capabilities, related experience, facilities, techniques, or unique combinations of these which are integral factors for achieving the proposal objectives.

(iii) The qualifications, capabilities, and experience of the proposed principal investigator, team leader, or key personnel critical in achieving the proposal objectives.

(iv) Overall standing among similar proposals and/or evaluation against the state-of-the-art.

(4) Evaluation of the cost of a proposed effort may include the realism and reasonableness of the proposed cost and available funds.

(j) **Evaluation Techniques.** Selection decisions will be made following peer and/or scientific review of the proposals. Several evaluation techniques are regularly used within NASA. In all cases proposals are subject to scientific review by discipline specialists in the area of the proposal. Some proposals are reviewed entirely in-house, others are evaluated by a combination of in-house and selected external reviewers, while yet others are subject to the full external peer review technique (with due regard for conflict-of-interest and protection of proposal information), such as by mail or through assembled panels. The final decisions are made by a NASA selecting official. A proposal which is scientifically and programmatically meritorious, but not selected for award during its initial review, may be included in subsequent reviews unless the proposer requests otherwise.

(k) **Selection for Award.**

(1) When a proposal is not selected for award, the proposer will be notified. NASA will explain generally why the proposal was not selected. Proposers desiring additional information may contact the selecting official who will arrange a debriefing.

(2) When a proposal is selected for award, negotiation and award will be handled by the procurement office in the funding installation. The proposal is used as the basis for

negotiation. The contracting officer may request certain business data and may forward a model award instrument and other information pertinent to negotiation.

(l) **Cancellation of NRA.** NASA reserves the right to make no awards under this NRA and to cancel this NRA. NASA assumes no liability for canceling the NRA or for anyone's failure to receive actual notice of cancellation.

## **Appendix C**

### **GUIDELINES FOR FOREIGN PARTICIPATION**

NASA accepts proposals from entities located outside the U.S. in response to this NRA. Proposals from non-U.S. entities should not include a cost plan. Non-U.S. proposals, and U.S. Proposals that include non-U.S. participation, must be endorsed by the respective government agency or funding/sponsoring institution in the country from which the non-U.S. participant is proposing. Such endorsement should indicate the following points: (1) The proposal merits careful consideration by NASA; and (2) If the proposal is selected, sufficient funds will be made available by the sponsoring foreign agency to undertake the activity as proposed.

Proposals, along with the requested number of copies and Letter of Endorsement must be forwarded to NASA in time to arrive before the deadline established for this NRA. In addition, one copy of each of these documents should be sent to:

NASA Headquarters  
Office of External Relations  
Mission to Planet Earth Division, Code IY  
Washington, DC 20546  
USA

Any materials sent by courier or express mail should include the street address 300 E Street, S. W., and substitute 20024 for the indicated ZIP code.

All proposals must be typewritten in English. All non-U.S. proposals will undergo the same evaluation and selection process as those originating in the U.S. Non-U.S. proposals and U. S. Proposals that include non-U.S. participation, must follow all other guidelines and requirements described in this NRA. Sponsoring non-U.S. agencies may, in exceptional situations, forward a proposal without endorsement to the above address, if review and endorsement are not possible before the announced closing date. In such cases, however, NASA's Mission to Planet Earth Division of the Office of External Relations should be advised when a decision on the endorsement is to be expected.

Successful and unsuccessful proposers will be contacted directly by the NASA Program Office coordinating the NRA. Copies of these letters will be sent to the sponsoring government agency.

NASA Research Announcement 98-OES-07

Proposal No. \_\_\_\_\_ (Leave Blank for NASA Use)

Title: \_\_\_\_\_

Principal Investigator:: \_\_\_\_\_

Department: \_\_\_\_\_

Institution: \_\_\_\_\_

Street/PO Box: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Country: \_\_\_\_\_ E-mail: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Co-Investigators:

Name

Institution

Telephone

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Budget:

1st Year: \_\_\_\_\_ 2nd Year: \_\_\_\_\_ 3rd Year: \_\_\_\_\_ Total: \_\_\_\_\_

Certification of Compliance with Applicable Executive Orders and U.S. Code

By submitting the proposal identified in this *Cover Sheet/Proposal Summary* in response to this Research Announcement, the Authorizing Official of the proposing institution (or the individual proposer if there is no proposing institution) as identified below:

- certifies that the statements made in this proposal are true and complete to the best of his/her knowledge;
- agrees to accept the obligations to comply with NASA award terms and conditions if an award is made as a result of this proposal; and
- confirms compliance with all provisions, rules, and stipulations set forth in the two Certifications contained in this NRA [namely, (i) *Certification of Compliance with the NASA Regulations Pursuant to Nondiscrimination in Federally Assisted Programs*, and (ii) *Certifications, Disclosures, And Assurances Regarding Lobbying and Debarment & Suspension*].

Willful provision of false information in this proposal and/or its supporting documents, or in reports required under an ensuing award, is a criminal offense (U.S. Code, Title 18, Section 1001).

Title of Authorizing Institutional Official: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Proposing Institution: \_\_\_\_\_

Telephone: \_\_\_\_\_ E-mail: \_\_\_\_\_ Facsimile: \_\_\_\_\_

## **Certification of Compliance with the NASA Regulations Pursuant to Nondiscrimination in Federally Assisted Programs**

The *(Institution, corporation, firm, or other organization on whose behalf this assurance is signed, hereinafter called "Applicant ")* hereby agrees that it will comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352), Title IX of the Education Amendments of 1962 (20 U.S.C. 1680 et seq.), Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and the Age Discrimination Act of 1975 (42 U.S.C. 16101 et seq.), and all requirements imposed by or pursuant to the Regulation of the National Aeronautics and Space Administration (14 CFR Part 1250) (hereinafter called "NASA") issued pursuant to these laws, to the end that in accordance with these laws and regulations, no person in the United States shall, on the basis of race, color, national origin, sex, handicapped condition, or age be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Applicant receives federal financial assistance from NASA; and hereby give assurance that it will immediately take any measure necessary to effectuate this agreement.

If any real property or structure thereon is provided or improved with the aid of federal financial assistance extended to the Applicant by NASA, this assurance shall obligate the Applicant, or in the case of any transfer of such property, any transferee, for the period during which the real property or structure is used for a purpose for which the federal financial assistance is extended or for another purpose involving the provision of similar services or benefits. If any personal property is so provided, this assurance shall obligate the Applicant for the period during which the federal financial assistance is extended to it by NASA.

this assurance is given in consideration of and for the purpose of obtaining any and all federal grants, loans, contracts, property, discounts, or other federal financial assistance extended after the date hereof to the Applicant by NASA, including installment payments after such date on account of applications for federal financial assistance which were approved before such date. The Applicant recognized and agrees that such federal financial assistance will be extended in reliance on the representations and agreements made in this assurance, and that the United States shall have the right to seek judicial enforcement of this assurance. This assurance is binding on the Applicant, its successors, transferees, and assignees, and the person or persons whose signatures appear below are authorized to sign on behalf of the Applicant.

NASA FORM 1206

## **CERTIFICATIONS, DISCLOSURES, AND ASSURANCES REGARDING LOBBYING AND DEBARMENT & SUSPENSION**

### **1. LOBBYING**

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 14 CFR Part 1271, as defined at 14 CFR Subparts 1271.110 and 1260.117, with each submission that initiates agency consideration of such applicant for award of a Federal contract, grant, or cooperative agreement exceeding \$ 100,000, the applicant must **certify** that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit a Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

### **2. GOVERNMENTWIDE DEBARMENT AND SUSPENSION**

As required by Executive Order 12549, and implemented at 14 CFR 1260.510, for prospective participants in primary covered transactions, as defined at 14 CFR Subparts 1265.510 and 1260.117—

(1) The prospective primary participant **certifies** to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal department or agency.

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

## Appendix E

### Letter of Intent

Due July 31, 1998

All prospective proposers are strongly encouraged to submit a letter of intent in response to this announcement. This will allow us to alert a peer review staff to adequately cover the proposal review process. This letter of intent is available electronically via the Internet at URL: <http://www.mtpe.hq.nasa.gov/LOI/form.html>. The URL for the Co-Investigator information is: <http://www.mtpe.hq.nasa.gov/LOI/coi.html>. We urge you to use these electronic letter of intent forms unless you do not have access to the Internet. In that case, we will accept a FAX copy sent to 202-554-3024 with the following information:

- PI and CoI names and addresses, (including Zip + 4);
- Title of proposal;
- Telephone number;
- Fax number;
- Email address; and
- A brief summary of what you plan to propose (Please limit this to no more than 3000 characters).

## APPENDIX F

### BUDGET SUMMARY

For period from \_\_\_\_\_ to \_\_\_\_\_

- Provide a complete Budget Summary for year one and separate estimates for each subsequent year.
- Enter the proposed estimated costs in Column A (Columns B & C for NASA use only).
- Provide as attachments detailed computations of all estimates in each cost category with narratives as required to fully explain each proposed cost. See *Instructions For Budget Summary* on following page for details.

		<u>  NASA USE ONLY  </u>	
	<b>A</b>	<b>B</b>	<b>C</b>
1. <u>Direct Labor</u> (salaries, wages, and fringe benefits)	_____	_____	_____
2. <u>Other Direct Costs:</u>			
a. Subcontracts	_____	_____	_____
b. Consultants	_____	_____	_____
c. Equipment	_____	_____	_____
d. Supplies	_____	_____	_____
e. Travel	_____	_____	_____
f. Other	_____	_____	_____
3. <u>Facilities and Administrative Costs</u>	_____	_____	_____
4. <u>Other Applicable Costs:</u>	_____	_____	_____
5. <u>SUBTOTAL--Estimated Costs</u>	_____	_____	_____
6. <u>Less Proposed Cost Sharing</u> (if any)	_____	_____	_____
7. <u>Carryover Funds</u> (if any)			
a. Anticipated amount : _____			
b. Amount used to reduce budget	_____	_____	_____
8. <u>Total Estimated Costs</u>	_____	_____	XXXXXXXX
9. APPROVED BUDGET	XXXXXX	XXXXXXXX	_____

## INSTRUCTIONS FOR BUDGET SUMMARY

1. Direct Labor (salaries, wages, and fringe benefits): Attachments should list the number and titles of personnel, amounts of time to be devoted to the grant, and rates of pay.
2. Other Direct Costs:
  - a. Subcontracts: Attachments should describe the work to be subcontracted, estimated amount, recipient (if known), and the reason for subcontracting.
  - b. Consultants: Identify consultants to be used, why they are necessary, the time they will spend on the project, and rates of pay (not to exceed the equivalent of the daily rate for Level IV of the Executive Schedule, exclusive of expenses and indirect costs).
  - c. Equipment: List separately. Explain the need for items costing more than \$5,000. Describe basis for estimated cost. General purpose equipment is not allowable as a direct cost unless specifically approved by the NASA Grant Officer. Any equipment purchase requested to be made as a direct charge under this award must include the equipment description, how it will be used in the conduct of the basic research proposed and why it cannot be purchased with indirect funds.
  - d. Supplies: Provide general categories of needed supplies, the method of acquisition, and the estimated cost.
  - e. Travel: Describe the purpose of the proposed travel in relation to the grant and provide the basis of estimate, including information on destination and number of travelers where known.
  - f. Other: Enter the total of direct costs not covered by 2a through 2e. Attach an itemized list explaining the need for each item and the basis for the estimate.
3. Facilities and Administrative (F&A) Costs: Identify F&A cost rate(s) and base(s) as approved by the cognizant Federal agency, including the effective period of the rate. Provide the name, address, and telephone number of the Federal agency official having cognizance. If unapproved rates are used, explain why, and include the computational basis for the indirect expense pool and corresponding allocation base for each rate.
4. Other Applicable Costs: Enter total explaining the need for each item.
5. Subtotal-Estimated Costs: Enter the sum of items 1 through 4.
6. Less Proposed Cost Sharing (if any): Enter any amount proposed. If cost sharing is based on specific cost items, identify each item and amount in an attachment.
7. Carryover Funds (if any): Enter the dollar amount of any funds expected to be available for carryover from the prior budget period. Identify how the funds will be used if they are not used to reduce the budget. NASA officials will decide whether to use all or part of the

anticipated carryover to reduce the budget (not applicable to 2nd-year and subsequent-year budgets submitted for award of a multiple year award).

8. Total Estimated Costs: Enter the total after subtracting items 6 and 7b from item 5.